

b. condensing the resultant organo-(ethynyl)chlorosilane product of step a with an excess of an alkali metal to form a silicon carbide ceramic.

50. A process of forming a photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic comprising the steps of:

a. reacting sodium acetylide with organo-chlorosilanes; and

b. polymerizing (condensing) the resultant organo-(ethynyl)chlorosilane product of step a with an excess of an alkali metal to form a silicon ceramic.

51. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

52. A process for fabricating a silicon carbide containing ceramic or ceramic composite which is microwave susceptible using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

53. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane

to silicon carbide ceramic according to claim 50.

54. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

55. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

56. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

57. A process of forming a photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic comprising the steps of:

a. reacting sodium acetylide with organo-chlorosilanes; and

b. polymerizing the resultant organo-(ethynyl)chlorosilane product of step a with an excess of an alkali metal.

58. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

59. A process for fabricating a boron carbide containing ceramic or ceramic composite which is microwave susceptible using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

60. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

61. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

62. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative

diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

63. A process for fabricating a microwave susceptible boron carbide containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

64. A process of forming a photo-curable pre-ceramic polymer, a lithium aluminosilicate poly(ethynyl)-carbosilane to boron carbide ceramic comprising the steps of:

- a. reacting sodium acetylide with organo-chlorosilanes; and
- b. polymerizing the resultant organo-(ethynyl)chlorosilane product of step a with an excess of an alkali metal.

65. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

66. A process for fabricating a boron carbide containing ceramic or ceramic composite which is microwave susceptible

using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

67. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

68. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

69. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

70. A process for fabricating a microwave susceptible boron carbide containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using photo-curable pre-ceramic polymer,

poly(ethynyl)-carbosilane to boron carbide ceramic according to claim 57.

71. A process of forming a photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon nitride ceramic comprising the steps of:

- a. reacting sodium acetylide with organo-chlorosilanes; and
- b. polymerizing the resultant organo-(ethynyl)chlorosilane product of step a with an excess of an alkali metal.

72. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 71.

73. A process for fabricating a silicon carbide containing ceramic or ceramic composite which is microwave susceptible using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 71.

74. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

75. A process for fabricating a silicon carbide containing

ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

76. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

77. A process for fabricating a microwave susceptible silicon nitride containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using photo-curable pre-ceramic polymer, poly(ethynyl)-carbosilane to silicon carbide ceramic according to claim 50.

78. A process comprising the step of using a photocurable preceramic polymer for fabricating a silicon carbide containing ceramic or ceramic composite for use in making diesel particulate

79. A process for fabricating a silicon carbide containing ceramic or ceramic composite which is microwave susceptible

using said photo-curable pre-ceramic polymer according to claim 78.

80. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using said photo-curable pre-ceramic polymer according to claim 78.

81. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using said photo-curable pre-ceramic polymer according to claim 78.

82. A process for fabricating a silicon carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using said photo-curable pre-ceramic polymer according to claim 78.

83. A process for fabricating a microwave susceptible silicon carbide containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using said photo-curable pre-ceramic polymer according to claim 78.



84. A process comprising the step of using a photo-curable pre-ceramic polymer for fabricating a boron carbide containing ceramic or ceramic composite for use in making diesel particulate.

85. A process for fabricating a boron carbide containing ceramic or ceramic composite which is microwave susceptible using said photo-curable pre-ceramic polymer according to claim 84.

86. A process for fabricating a microwave susceptible boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using said photocurable preceramic polymer according to claim 84.

87. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using said photo-curable pre-ceramic polymer according to claim 84.

88. A process for fabricating a boron carbide containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using said photo-curable pre-ceramic polymer according to claim 84.

89. A process for fabricating a microwave susceptible boron

carbide containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using said photo-curable pre-ceramic polymer according to claim 84.

90. A process comprising the step of using a photo-curable pre-ceramic polymer for fabricating a lithium alumino-silicate containing ceramic or ceramic composite for use in making diesel particulate.

91. A process for fabricating a lithium alumino-silicate containing ceramic or ceramic composite which is microwave susceptible using said photo-curable pre-ceramic polymer according to claim 90.

92. A process for fabricating a microwave susceptible lithium alumino-silicate containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using said photo-curable pre-ceramic polymer according to claim 90.

93. A process for fabricating a lithium alumino-silicate containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using said photo-curable pre-ceramic polymer according to claim 90.

94. A process for fabricating a lithium alumino-silicate containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using said photo-curable pre-ceramic polymer according to claim 90.

95. A process for fabricating a microwave susceptible lithium alumino-silicate containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using said photo-curable pre-ceramic polymer according to claim 90.

96. A process comprising the step of using a photo-curable pre-ceramic polymer for fabricating a silicon nitride containing ceramic or ceramic composite for use in making diesel particulate.

97. A process for fabricating a silicon nitride containing ceramic or ceramic composite which is microwave susceptible using said photo-curable pre-ceramic polymer according to claim 96.

98. A process for fabricating a microwave susceptible silicon nitride containing ceramic or ceramic composite for use in making regenerative diesel particulate filters using said photo-curable pre-ceramic polymer according to claim

96.

99. A process for fabricating a silicon nitride containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated cylindrical geometry using said photo-curable pre-ceramic polymer according to claim 96.

100. A process for fabricating a silicon nitride containing ceramic or ceramic composite for use in making regenerative diesel particulate filters composed of matted ceramic fibrils shaped in a corrugated conical geometry using said photo-curable pre-ceramic polymer according to claim 96.

101. A process for fabricating a microwave susceptible silicon nitride containing ceramic or ceramic composite for use in making radiant burners, thermal oxidizers of volatile organic compounds, filters and automotive catalytic converters using said photo-curable pre-ceramic polymer according to claim 96.

102. A method for making high temperature filter media comprising melt-spinning a plurality of fibers of pre-ceramic thermoplastic polymer to form a non-woven textile web of said fibers, curing and cross-linking said thermoplastic polymer to a thermo-set polymer, and thermally decomposing said thermo-set polymer to ceramic.